AMENDMENTS TO THE CLAIMS

Claims 1-4 (Cancelled)

5. (Currently amended) The apparatus of Claim [[1]] 44, wherein the feedback loop adjusts ~~monitoring component is configured to monitor an output voltage of the electrical signal and to adjust~~ at least one of an amplification of the transmitter and [[a]] the gain of the photodiode ~~receiver~~ to maintain a desired RMS level of the electrical signal.

Claims 6-7 (Cancelled)

8. (Currently amended) The apparatus of Claim [[7]] 44, wherein the receiver further ~~noise energy calculation component~~ includes an integrate-and-dump circuit that integrates an energy value of the noise over a bit interval.

9. (Currently amended) The apparatus of Claim 8, wherein the receiver further ~~noise energy calculation component~~ includes a subtractor component that receives a state indicator signal and subtracts a high-state +A or a low-state -A state from the electrical signal based on the state indicator signal.

10. (Currently amended) The apparatus of Claim 9, wherein the receiver further ~~noise energy calculation component~~ includes a squaring function that squares an output from the subtractor component and transmits the squared output to the integrate-and-dump circuit.

11. (Cancelled)

12. (Currently amended) The apparatus of Claim [[1]] 44, wherein the feedback loop ~~monitoring component~~ includes a state means calculation component configured to compute at least one of a high state means and a low state means of the electrical signal.

13. (Currently amended) The apparatus of Claim [[1]] 45, wherein the ~~monitoring component~~feedback loop includes:

a high energy calculation component configured to compute an average energy for [[the]] a high-state A;

a low energy calculation component configured to compute an average energy for [[the]] a low-state -A; and

a comparator configured to compare a ratio of the average energies for the high-and low-states A, -A with a predetermined threshold.

14. (Currently amended) The apparatus of Claim [[1]] 45, wherein the ratio is ~~monitoring component is configured to reduce at least one of an amplification of the transmitter and a gain of the receiver when~~ a ratio of an average energy of a high-state A of the electrical signal and an average energy of a low-state A of the electrical signal is greater than a predetermined threshold.

15. (Cancelled)

16. (Currently amended) An optical system, comprising:

a transmitter configured to transmit an optical signal~~, the transmitter including an optical amplifier~~;

a receiver including an avalanche photodiode configured to receive the optical signal and to output an electrical signal; and

a monitoring component ~~to provide a feedback loop to increase a dynamic range of the receiver when an optical signal is high without measuring a temperature of the surrounding environment of the receiver, the monitoring component to:~~ for preventing breakdown of the avalanche photodiode, the component

~~monitor~~ monitoring a noise level of at least a portion of the electrical signal including determining a presence or absence of the optical signal at the receiver, computing at least one of a high state means and a low state means of the electrical signal, computing an average noise energy for the high-state A, computing an average noise energy for the low-state –A, and computing a ratio of the average noise energies for the high- and low-states A, -A, and

~~reduce~~ reducing at least one of an optical amplification of the transmitter and a gain of the receiver when [[a]] the ratio ~~of an average energy of a high-state A of the electrical signal and an average energy of a low-state A of the electrical signal~~ is greater than a predetermined threshold~~, the threshold value being at a point where a breakdown voltage of the receiver is eminent~~.

17. (Original) The optical system of Claim 16, wherein the transmitter includes an optical amplifier.

18. (Cancelled)

19. (Currently amended) The optical system of Claim 16, wherein the monitoring component adjusts ~~is configured to monitor an output voltage of the electrical signal and to adjust~~ at least one of an amplification of the transmitter and [[a]] gain of the receiver to maintain a desired RMS level of the electrical signal.

Claims 20-23 (Cancelled)

24. (Previously presented) An aircraft comprising:

a fuselage;

a propulsion system operatively coupled to the fuselage; and

an optical system configured to transmit signals, the optical system including:

a transmitter configured to transmit an optical signal, the transmitter including an optical amplifier;

a receiver configured to receive the optical signal and to output an electrical signal; and

a monitoring component to provide a feedback loop to increase a dynamic range of the receiver when an optical signal is high without measuring a temperature of the surrounding environment of the receiver, the monitoring component to:

monitor a noise level of at least a portion of the electrical signal, and

reduce at least one of an amplification of the transmitter and a gain of the receiver when a ratio of an average energy of a high-state A of the electrical signal and an average energy of a low-state A of the electrical signal is greater than a predetermined threshold, the threshold value being at a point where a breakdown voltage of the receiver is eminent.

25. (Cancelled)

26. (Currently amended) The ~~vehicle~~ aircraft of Claim 24, wherein the receiver includes an avalanche photodiode.

27. (Currently amended) The ~~vehicle~~ aircraft of Claim 24, wherein the monitoring component is configured to monitor an output voltage of the electrical signal and to adjust at least one of an amplification of the transmitter and a gain of the receiver to maintain a desired RMS level of the electrical signal.

28. (Currently amended) The ~~vehicle~~ aircraft of Claim 24, wherein the monitoring component includes a noise energy calculation component configured to calculate a ~~calculated~~ noise level of at least a portion of the electrical signal.

29. (Currently amended) The ~~vehicle~~ aircraft of Claim 24, wherein the monitoring component includes:

a high energy calculation component configured to compute an average noise energy for the high-state A;

a low energy calculation component configured to compute an average noise energy for the low-state -A; and

a comparator configured to compare a ratio of the average noise energies for the high- and low-states A, -A with a predetermined threshold.

30. (Cancelled)

31. (Currently amended) The ~~vehicle~~ aircraft of Claim 24, wherein the monitoring component includes:

a condition determining component configured to determine at least one of a presence or an absence of light at the receiver;

a state means calculation component configured to compute at least one of a high state means and a low state means of the electrical signal;

a high energy calculation component configured to compute an average noise energy for the high-state A;

a low energy calculation component configured to compute an average noise energy for the low-state -A; and

a comparator configured to compare a ratio of the average noise energies for the high- and low-states A, -A with a predetermined threshold.

32. (Currently amended) A method of controlling an output of an optical system, the method comprising:

receiving an optical signal with a receiver in an environment exhibiting significant variation in temperature;

using a photodiode of the receiver to convert ~~converting~~ the optical signal to a corresponding electrical signal;

~~providing a feedback loop to increase a dynamic range of the receiver when an optical signal is high~~ computing noise in the electrical signal, and adjusting gain of the photodiode as a function of the computed noise without measuring [[a]] temperature of the ~~surrounding~~ environment; and ~~of the receiver by:~~

computing a ratio of high- and low-states to prevent breakdown of the photodiode and possible interruption of the receiver, including:

~~calculating a noise level of at least a portion of the electrical signal, and comparing the noise level with a threshold value, the threshold value being at a point where a breakdown voltage of the receiver is eminent,~~

~~wherein calculating a noise level of at least a portion of the electrical signal includes:~~

computing an average energy for a high-state A of the electrical signal;

computing an average energy for the low-state -A of the electrical signal; and

comparing a ratio of the average energies for the high- and low-states A, -A with [[the]] a threshold value. [[; and]]

~~adjusting at least one of an amplification of the optical signal and a gain of the receiver based on the noise level.~~

33. (Original) The method of Claim 32, further including transmitting the optical signal to the receiver.

34. (Cancelled)

35. (Currently amended) The method of Claim 32, wherein ~~adjusting at least one of an amplification of the optical signal or a gain of the receiver based on the noise level adjusting~~ at least one of an amplification of a transmitter and a gain of the receiver is adjusted to maintain a desired RMS level of the electrical signal.

36. (Canceled)

37. (Currently amended) The method of Claim 32, wherein ~~receiving an optical signal with a receiver includes receiving an optical signal with~~ an avalanche photodiode is used to convert the optical signal, and wherein the ratio is compared to ~~comparing the calculated noise level with a threshold value includes comparing the calculated noise level with~~ a breakdown threshold of the avalanche photodiode.

38. (Cancelled)

39. (Currently amended) The method of Claim [[38]] 32, wherein computing the noise in ~~calculating a noise energy level of at least a portion of~~ the electrical signal includes integrating a noise energy value over a bit interval.

40. (Currently amended) The apparatus of ~~method of~~ Claim [[38]] 44, wherein computing ~~calculating a~~ noise ~~energy level of at least a portion of~~ in the electrical signal

includes receiving a state indicator signal that indicates a condition of the optical signal, and subtracting a high-state +A or a low-state -A state from the electrical signal based on the state indicator signal.

41. (Cancelled)

42. (Currently amended) The method of Claim 32, wherein ~~adjusting~~ at least one of an amplification of the optical signal and a gain of the receiver based is reduced ~~on the noise level includes reducing at least one of an amplification of the optical signal and a gain of the receiver~~ when a ratio of the average energy of the high-state A and the average energy of the low-state A is greater than the predetermined threshold.

43. (Currently amended) The method of Claim 32, further comprising ~~wherein monitoring a noise level of at least a portion of the electrical signal includes:~~

determining at least one of a presence or an absence of light at the receiver prior to computing the average noise energies. [[;]]

~~computing at least one of a high-state means and a low-state means of the electrical signal;~~

~~computing an average noise energy for the high-state A;~~

~~computing an average noise energy for the low-state -A; and~~

~~comparing a ratio of the average noise energies for the high- and low-states A, -A with a predetermined threshold.~~

44. (New) An apparatus operable in an environment exhibiting significant variation in temperature, the apparatus comprising:

an optical signal transmitter; and

an optical signal receiver for receiving an optical signal from the transmitter, the receiver including a photodiode for converting the optical signal to an electrical signal;

the receiver further including a feedback loop for monitoring the electrical signal outputted by the photodiode, computing noise in the monitored signal, and adjusting gain of the photodiode as a function of the computed noise;

wherein the feedback loop adjusts the gain without using measured temperature of the environment.

45. (New) The apparatus of claim 44, wherein the photodiode is an avalanche photodiode; and wherein the feedback loop computes a ratio of high- and low-states to prevent breakdown of the photodiode and possible interruption of the receiver.